

Folding Bed With Arms

Field of the Invention

This invention relates to a folding bed with arms that is suitable for travel and leisure and that can be used in a variety of environments including, for example, in households, outdoors, in a courtyard, in a park, and at the beach.

Background of the Invention

The existing folding bed suitable for travel and leisure mainly has two structures. One uses an assembly-type structure composed of a plurality of U-shaped rectangular frames, with the fabric being able to be stretched tight. This is comfortable for sitting and lying, but has a large volume when folded, and is thus inconvenient for carrying and depositing. The other uses a plurality of crossed supports connected together, and has a small volume when folded, but the fabric is unable to be stretched tight because the fabric is connected to the bed support via some fixing points. When a person sits, lies, or sleeps on the bed, the bed will sink undesirably and for this reason is uncomfortable in use. In addition, the bed body support structure has poor strength and therefore can bear only a relatively small load. Thus, after a period of use or upon bearing a heavy load, the bed plane is likely to tear.

Summary of the Invention

The present invention provides a folding bed with arms that overcomes the above-mentioned defects of conventional folding beds. The front support of the bed body support is configured to form a quadrangular structure. The rear support employs crossed supports and has folding arms, which enforces the strength of the bed body support structure. The bed plane is fitted onto the bed body support, and thus can easily be stretched tight. A person feels comfortable when sitting, lying, or sleeping on the bed surface, with both hands resting on the arms, thus achieving an object of comfort and convenience.

In one embodiment, the folding bed with arms includes a bed body support, arms,

and a bed plane. The bed body support includes a front support and a rear support. The front support includes a foot-rest rod, a front leg tube, a front support rod, a rear support rod, a connection rod, and a pair of front crossed rods. The rear support includes a seating frame rod, a back-rest rod, a middle crossed rod, and a rear crossed rod.

The front end of the foot-rest rod is connected to the front support rod via a fixing element. One end of the rear support rod is connected to the middle portion of the foot-rest rod via a fixing connection element, and the other end of the rear support rod is connected to the lower portion of the back-rest rod. One end of the connection rod is connected to the rear support rod, and the other end of the connection rod is connected to the front support rod via a sliding sleeve. The front leg tube is connected to the rear support rod through the sliding sleeve. The foot-rest rod, front support rod, rear support, and connection rod form a quadrangular structure so that the position of the front leg tube can be adjusted conveniently by means of the sliding sleeve along with the folding and unfolding of the integral bed frame. One end of the front crossed rod is connected to the rear support rod via a U-shaped hinging element and the other end is connected to the sliding sleeve. The rear end of the foot-rest rod is connected to the seating frame rod via a rotary connection element, and the seating frame rod is hinged to the back-rest rod. One end of the middle crossed rod is connected to the seating frame rod, and the other end of the middle crossed rod is connected to the lower portion of the back-rest rod. One end of the rear crossed rod is connected to the upper portion of the back-rest rod via a U-shaped hinging element, and the other end thereof is connected to the lower portion of the seating frame rod.

The arms may be rigid or soft. When rigid arms are used, the arm support rod is connected to the upper portion of the seating frame rod by means of an arm support rod fixing element. One end of the rigid arm is connected to the back-rest rod, and the other end to the arm is connected to the support rod. When soft arms are used, the arms are disposed at the upper portion of the middle crossed rod, and the middle crossed rod is connected to the seating frame rod via a U-shaped hinging element.

The folding bed plane is fitted onto the foot-rest rod, the seating frame rod, and

back-rest rod of the bed body support.

The operation principles of the folding bed with arms will now be described. To use the folding bed, the seating frame rod and the back-rest rod are pushed apart. At this time, the rear support rod automatically unfolds the front support rod and foot-rest rod, and the front leg tube slides along with the sliding sleeve mounted on the front support rod and the connection rod. The bed body and bed plane are then unfolded at once. When the sliding sleeve slides upward to the limiting position portion, the bed frame is fully unfolded for use. To fold the folding bed, the seating frame rod and back-rest rod are folded inward. At the same time, the rear support rod and foot-rest rod are pulled inward to cause the quadrangular structure to fold, and the sliding sleeve moves downward to the lower portion of the front leg tube to cause the bed plane and the entire support to fold into a package for carrying.

The folding bed with arms is elegantly designed and has a compact structure. The entire bed can be freely folded and unfolded because the bed body foot-rest rod, the front support rod, rear support, and the connection rod form a quadrangular structure, and the rear support uses a crossed support and has folding arms. In addition, the bed becomes small when folded. When the bed is unfolded, because the seating frame rods and the back-rest rods are connected from front to rear to form two side frames of the folding bed and the bed plane fabric is fitted onto these rods at both sides, the bed plane fabric gradually stretches tight along with the unfolding of the supports and has a uniform force. A person feels comfortable when lying on the bed. The bed body support structure has a high strength and a large bearing load. The folding bed with arms can be used as a deck chair, sleeping bed, and sitting chair as well. The bed is safe and reliable when a person sits on different positions of the bed body support. As the bed is provided with rigid or soft arms, a person sitting or resting on the bed may lean on the arms. And the folding bed is comfortable in use and convenient to fold and carry.

Brief Description of the Drawings

Figure 1 is a schematic diagram of the first example of the folding bed with arms according to this invention;

Figure 2 is a schematic diagram of the bed frame structure of the first example of the folding bed with arms according to this invention;

Figure 3 is a schematic diagram of the second example of the folding bed with arms according to this invention;

Figure 4 is a schematic diagram of the bed frame structure of the second example of the folding bed with arms according to this invention;

Figure 5 is a schematic diagram of the rotary connection element of the folding bed with arms according to this invention;

Figure 6 is a schematic diagram of the arm support rod fixing connection element of the folding bed with arms according to this invention;

Figure 7 is a local amplified schematic diagram of the position I shown in Figure 2.

Detailed Description of the Invention

In the following discussion, the present invention is further described in conjunction with the drawings.

Referring to Figures 1 through 6, the folding bed with arms of this invention includes a bed body support, arms 8, and a bed plane or fabric 2. The bed body support includes a front support and a rear support. The front support includes foot-rest rods 1 disposed oppositely from one another at left and right sides of the front support, front leg tubes 17, a front support rod 19, a rear support rod 13, a connection rod 14, and a pair of front crossed rods 3. The rear support includes seating frame rods 10 disposed oppositely from one another at left and right sides of the rear support, a back-rest rod 11, a pair of middle crossed rods 12, and a pair of rear crossed rods 7.

As the folding bed with arms of this invention is a left-right symmetrical structure, the following exemplary description is based on one side of the structure, with it

being understood that the structure of the other side is the same. The front end of the foot-rest rod 1 is connected to the front support rod 19 via a fixing connection element 20. One end of the rear support rod 13 is connected to the middle portion of the foot-rest rod 1 via a fixing connection element 20. The other end of the rear support rod 13 is connected to the lower end of the back-rest rod 11. One end of the connection rod 14 is connected to the rear support rod 13, and the other end of the connection rod 14 is connected to the front support rod 19 via a sliding sleeve 16. The sliding sleeve 16 is disposed on the front leg tube 17, and the front leg tube 17 is connected to the rear support rod 13. The foot-rest rod 1, front support rod 19, rear support rod 13, and connection rod 14 form a quadrangular structure so that the position of the front leg tube can be adjusted conveniently by means of the sliding sleeve 16 along with the folding and unfolding of the integral bed frame. The upper portion of the front leg tube 17 is disposed with a position limiting element 15, and the position limiting element 15 is located at the upper portion of the sliding sleeve 16 for limiting the maximum rising position of the sliding sleeve. One end of the front crossed rod 3 is connected to the rear support rod 13 and the other end is connected to the sliding sleeve 16 via a U-shaped hinging element. The rear end of the foot-rest rod 1 is connected to the seating frame rod 10 via a rotary connection element 4, and the seating frame rod 10 is hinged to the back-rest rod 11. One end of the middle crossed rod 12 is connected to the seating frame rod 10, and the other end thereof is connected to the lower portion of the back-rest rod 11. One end of the rear crossed rod 7 is connected to the upper portion of the back-rest rod 11 via a U-shaped hinging element, and the other end thereof is connected to the lower portion of the seating frame rod 10.

The arms may be rigid arms 8 (see, for example, Figure 1) or soft arms 21 (see, for example, Figure 3). When rigid arms 8 are used, the arm support rod 5 is connected to the upper portion of the seating frame rod 10 by means of an arm support rod fixing element 6. One end of the rigid arm 8 is connected to the back-rest rod 11, and the other end thereof is connected to the arm support rod 5. When soft arms 21 are used (see Figures 3 and 4), the upper portion of the middle crossed rod 12

is provided with soft arm connection element 22, and the middle crossed rod 12 is connected to the arm support rod fixing element 6 fixed onto the seating frame rod 10 via a U-shaped hinging element. The soft arm connection element 22 extends upward from the upper portion of the middle crossed rod 12 and has a bent connection end. One end of the soft arm 21 is connected to the back-rest rod, and the other end is fixed to the connection end of the soft arm connection element 22. The folding bed plane is fitted onto the foot-rest rod, seating frame rod, and back-rest rod of the bed body support. Shoes 18 are provided at the bottoms of the front leg tube, back-rest rod, and seating frame rod.

Referring to Figure 5, the rotary connection element 4 of the folding bed with arms has an open rotary element 41 and a socket rotary element 44. One end of the socket rotary element 44 is inserted into the notch 43 of the open rotary element 41 to accomplish a mutually rotary connection, and the other end of the socket rotary element 44 is provided with the connection end 45, which is connected to the seating frame rod 10. The open rotary element 41 is provided with a foot-rest rod connection end 42, which is connected to foot-rest rod 1.

Referring to Figures 1, 2, and 6, the arm support rod fixing element 6 of the folding bed with arms has a fixing element body 61, which is provided with a seating frame rod connection hole 62. A through hole 66 passes through the seating frame rod connection hole 62 from one side of the fixing element body to the other side thereof, and the seating frame rod 10 passes through the seating frame connection hole 62. The seating frame rod 10 is connected to the fixing element 6 by means of an axle passing through the through hole 66. The fixing element body 61 is provided with an arm support rod connection hole 65 in the same axle direction as the through hole 66 and U-shaped hinging hole 64. The arm support rod connection hole 65 and U-shaped hinging hole 64 are located at the lower/upper side of the seating frame rod connection hole, and at the lower side in this example. An arm support rod fixing groove 63 is disposed at one side of the fixing element body 61, and the arm support rod 5 can be fitted into it.

To use the folding bed, the seating frame rod 10 and the back-rest rod 11 are

pushed apart. At this time, the rear support rod 13 automatically unfolds the front support rod 19 and foot-rest rod 1, and the front leg tube 17 slides along with the sliding sleeve 16 mounted on the front support rod 19 and the connection rod 14. The bed body and bed plane 2 are then unfolded at once for use. To fold the folding bed, the seating frame rod 10 and back-rest rod 11 are folded inward. At the same time, the rear support rod 13 and foot-rest rod 1 are pulled inward to cause the quadrangular structure to fold, and the sliding sleeve 16 moves downward to the lower portion of the front leg tube 17 to cause the bed plane 2 and the entire support to fold into a package for carrying.

The invention has been described herein in terms of several exemplary embodiments. Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention. The embodiments and preferred features described above should be considered exemplary, with the invention being defined by the appended claims and equivalents thereof.